

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested. Claims 16-20, 22-23, 25-27, and 31-40 are in this application. Claim 22 has been amended to include the limitations of claim 21, and claim 25 has been amended to correct informalities and remove redundancies. Claims 1-15, 21, 24, and 28-30 have been cancelled. Claims 31-40 have been added to alternately and additionally claim the present invention.

The Examiner objected to the drawings under 37 CFR §1.83(a), indicating that the limitation of "a first layer of dielectric material" in claim 16 must be shown or the features cancelled from the claims. The Examiner also rejected claims 16-20 under 35 U.S.C. §112, first paragraph, because the limitation of "a first layer of dielectric material" in claim 16 is not disclosed. Applicant notes, however, that the first layer of dielectric material in claim 16 can be read to be, for example, the layer of dielectric material 450 shown in FIGs. 4K-4R of applicant's specification. As a result, it is believed that the drawings satisfy the requirements of 37 CFR §1.83(a), and that claims 16-20 satisfy the requirements of the first paragraph of section 112.

With further respect to the drawings, applicant requests that the Examiner indicate if the formal drawings mailed on September 4, 2002 (with a certificate of mailing) and received by the PTO on September 9, 2002 have been entered into the file.

The Examiner rejected claims 16 and 21-30 under 35 U.S.C. §102(b) as being anticipated by Vinal (U.S. Patent No. 5,525,822). The Examiner also rejected claims 17-20 under 35 U.S.C. §103(a) as being unpatentable over Vinal as applied to claim 16, and further in view of Etou et al. (U.S. Patent No. 5,915,179). For the reasons set forth below, applicant respectfully traverses these rejections.

Claim 16 recites:

"a well formed in the first semiconductor material, the well having a surface, a second conductivity type, and a dopant concentration;

"a first doped region of the second conductivity type formed in the well, the first doped region having a dopant concentration that is greater than the dopant concentration of the well;

"a second doped region of the first conductivity type formed in the well, the second doped region being spaced apart from the first doped region;

"a third doped region formed in the well, the third doped region being spaced apart from the first and second doped regions;

"a layer of insulation material formed on the surface of the well, the layer of insulation material having a first opening that exposes the first doped region of the well, a second opening that exposes the second doped region of the well, and a third opening that exposes the third doped region of the well;

"a first section of a second semiconductor material formed on the layer of insulation material and the first region;

"a second section of the second semiconductor material formed on the layer of insulation material and the second region, the second section being spaced apart from the first section; and

"a first layer of dielectric material formed on the first section, the second section, and the third doped region."

In rejecting the claims, the Examiner pointed to well 22 shown in FIG. 1 of Vinal as constituting the well of claim 16, and n++ region 23 shown in FIG. 1 of Vinal as constituting the first doped region of claim 16. The Examiner also pointed to p+ region 33a as constituting the second doped region of claim 16, and n++ region 24 shown in FIG. 1 of Vinal as constituting the third doped region of claim 16.

In addition, the Examiner pointed to insulators 41 and 42 shown in FIG. 1 of the Vinal reference as constituting the layer of insulation material of claim 16, electrode 31 shown in FIG. 1 of Vinal as constituting the first section of claim 16, and electrode 34 shown in FIG. 1 of Vinal as constituting the second section of claim 16.

With respect to the first layer of dielectric material required by claim 16, the Examiner argued that the Vinal reference teaches this limitation, but did not appear to identify any structure in Vinal that can be read to be the first layer of dielectric

material. From what applicant can determine, however, there is no structure in Vinal that can be read to be the first layer of dielectric material required by claim 16.

As shown in FIG. 1 of Vinal, all of the surface area of n++ region 24 (read by the Examiner to be the third doped region) is covered by either electrode 32 or insulator 41 (read by the Examiner to be the layer of insulation material). Thus, it is not possible for any other layer of material, including "a first layer of dielectric material," to be formed on the third doped region because there is no room.

As a result, since it is not possible for any other layer of material, including "a first layer of dielectric material," to be formed on the third doped region, claim 16 is not anticipated by Vinal. In addition, since claims 17-20 depend either directly or indirectly from claim 16, claims 17-20 are patentable over Vinal in view of Etou.

With respect to claim 22, this claim recites, in part,

"a metallic layer formed on the third doped region; and
"a layer of insulation material formed on the metallic layer, the layer of insulation material being free of a conductive material that extends through the layer of insulation material and contacts the metallic layer."

In rejecting claim 22, the Examiner pointed to n++ region 24 shown in FIG. 1 of Vinal as constituting the third region of claim 22, and electrode 34 shown in FIG. 1 of Vinal as constituting the metallic layer of claim 22. Applicant notes, however, that electrode 34 is not formed on n++ region 24 (read by the Examiner to be the third region) and, therefore, can not be read to be the metallic layer required by claim 22. As a result, applicant assumes that the Examiner intended to read electrode 32 to be the metallic layer of claim 22.

In addition, the Examiner pointed to insulator 42 shown in FIG. 1 of Vinal as constituting the layer of insulation material required by claim 22. For the reasons noted above, applicant assumes that the Examiner intended to read insulator 41 to be the layer of insulation material required by claim 22. Insulator 41, however, can not be read to be the layer of insulation material required by claim 22.

As shown in FIG. 1 of Vinal, electrode 32 is a conductive material that extends through insulator 41 because insulator 41 is on both sides of electrode 32. As a result, it is not possible for insulator 41 to be "free of a conductive material that extends through the layer of insulation material" as required by claim 22. Thus, since insulator 41 is not free of a conductive material, claim 22 is not anticipated by the Vinal reference. In addition, since claims 23 and 25-27 depend either directly or indirectly from claim 22, these claims are not anticipated by Vinal for the same reasons as claim 22.

New claim 31 recites, in part,

"a third doped region formed in the well, the third doped region being spaced apart from the first and second doped regions and having a dopant concentration that is greater than the dopant concentration of the well;

"a metallic material formed on a metal region of the top surface of the third doped region, the metallic material having a top surface; and

"a region of insulation material that contacts the top surface of the metallic material, no conductive material contacting the top surface of the metallic material over the metal region."

Applicant can find no structure that can be read to be the region of insulation material where no conductive material contacts the top surface of the metallic material over the metal region as required by new claim 31. As shown in FIG. 1 of Vinal, a conductive drain line D contacts the top surface of electrode 32. Thus, a conductive material contacts the top surface of the metallic region. As a result, new claims 31-40 are not anticipated by Vinal, and are patentable over Vinal in view of Etou.

Thus, for the foregoing reasons, it is submitted that all of the claims are in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are respectively requested.

Respectfully submitted,

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